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FLOCKING, MATING, AND NEST-BUILDING HABITS OF THE PRAIRIE HORNED LARK

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The Prairie Horned Lark (*Otocoris alpestris praticola*) is a fairly common but local permanent resident throughout Pennsylvania and the Panhandle of West Virginia where the writer has studied the species during the past thirteen years.

During winter it is usually found in flocks in open fields or on windy hill-tops. During seasons of heavy snow it often frequents the roads in the rural districts where it feeds upon waste grain and horse manure. These winter flocks assemble shortly after the nesting season, and the smaller groups are probably composed of parent birds of the preceding nesting season with their broods of young. No definite data are at hand as to the average number of broods produced by each pair in the present region; but that two broods are usually reared is well authenticated; and it is probable that a third brood is sometimes launched before the advent of chill autumn weather. These broods remain with the parents for some months, often until the following mating season, at which time a complete breaking up occurs.

Many family flocks sometimes assemble in a chosen field or hill-top for the winter season. Such flocks sometimes number several hundred, although usually but twenty or thirty are to be found. Flocks observed near Harrisburg, Dauphin County, Pennsylvania, were large: on March 5, 1927, over four hundred were counted in one field. In late January, 1922, a flock was seen on the plateau above Beaner's Hollow, near Beaver, Beaver County, Pennsylvania, during a cold but snowless period. Here in an exposed field was a flock numbering a hundred or more. Part of the field was green with shoots of winter wheat; part was rather sparsely strewn with straw and manure, and part was bare and rocky and gone to waste. A large barn with much straw about it stood at one edge of the field, and here the flock spent much time feeding. When first noted all the birds were together

wandering about over the ground, searching busily for food. So protectively were they colored that it was almost impossible to keep more than one bird under observation at a time, since to move one's eyes from a bird meant to lose it altogether. Their plumage was fluffed out to retain the body heat and some of them stood much of the time on one foot. When first disturbed the whole flock rose simultaneously, their fluttering wings producing a peculiar explosive sound. With a fine-toned note from each bird upward went the whole mass, higher and higher, in wide circles above the field, seemingly intent on leaving altogether. Suddenly, and in a flock, twelve birds left the mass and descended to a distant corner of the field. This flock remained separate during several hours of observation that day, and other small flocks of a similar number which left consequently also remained separate. There may be evidence of an instinct for self preservation in this breaking up, if the birds have come to believe that they are safer on the ground by themselves, than flying in the flock, when pursued.

The actions of this large flock were typical. Once the large mass was disturbed the birds were not found together again, and by the end of the day only small flocks were flushed. On the following day the same flock movements were noted. When undisturbed the flock remained together from morning until night, for during winter Prairie Horned Larks are very sociable.

Only once have I had the pleasure of witnessing the awakening of a flock. The dainty creatures left their roosts beside or beneath little clumps of grass to mount pebbles where they preened, shook and smoothed their plumage. Soon they began to eat, and the search for food continued almost all day. Such a large flock must rather effectively remove the weed seeds from the surface of a given area during a winter's occupancy. Apparently they did not scratch or dig with their feet, although the toe-nails of specimens taken from the flock were decidedly worn from treading the frozen ground.

Occasionally an undisturbed flock circles about the field several times merely for exercise, and settles near the place whence it started. It is remarkable how suddenly and yet how simultaneously the whole flock moves; and how accurate every wing stroke is. Yet individuals sometimes lag, and the excitement or fear of the individual left behind is sometimes amusing. I have seen two birds thus left behind mount clods and watch the flock with necks stretched high, twittering as though they could not follow. They were perfectly able to fly; perhaps they simply had not obeyed rapidly enough some flocking instinct or the command of a leader.

The ease of flight of these birds is a matter of common knowledge; but when they move off but a little frightened, and glide along the ground in long, sweeping curves, their grace rivals that of deliberate swallows.

In mid-morning if the sun becomes warm activity slackens somewhat, and they may be seen standing on one foot on a stone, or hunched up on the turf with eyes partly closed. The incessant low twittering subsides as from some remote part of the field drifts a snatch of the spring song, uttered from the ground. Usually at this season the "horns" on the head are not very prominent, because the plumage is unworn, and is so fluffed out that such protruding tufts are not visible.

The winter call-notes are usually of one or two syllables, and are low and gentle, suggesting at times that the bird is timid or exhausted. The notes are clearest and loudest during flight, just before the flock alights, in this respect resembling the din made by the huge clouds of Longspurs of the mid-west, as they settle in the grass. Individual birds, apart from the flock, usually utter louder and clearer notes also.

Disbanding of the winter flock occurs gradually. In West Virginia large flocks were in evidence until the fifteenth of February. In many parts of Pennsylvania mated pairs have been noted as early as February 20. It is probable that fully adult birds mate first, and that the flocks which wander about the fields after certain pairs have segregated themselves are composed of young birds of the previous season. Thus at Duquesne, Allegheny County, Pennsylvania, three mated pairs were seen on February 17, 1923, while a flock of fifty birds remained together nearby. I did not note any difference in age in specimens taken from the mated pairs and the flocks on this date.

It is my belief that Prairie Horned Larks often mate for life, for I have noted birds with recognizable mannerisms on favorite nesting grounds season after season. If such constancy is characteristic, it is not surprising that no great demonstration occurs in the winter flock when established pairs decide to start nesting operations.

Song must not be an important phase of the incipient stages of courtship, else a late winter flock with rival males in full song would long have been famous in our bird literature. In mating, a certain amount of subdued quarelling sometimes takes place, mainly tussles fought on the ground seasoned by quick flights and occasional wrestling either in the air or on the ground. I have seen three males chasing each other wildly for a short time; but when they alighted their manner was instantly gentle and impersonal. I believe the birds are es-

sentially pacific and that males, rather than have a prolonged fight over a certain female, give in to a chosen one, and search elsewhere for a mate. This is particularly true, perhaps, where large numbers of females are present.

With the dispersal of the flocks the more delightful elements of courtship become evident, most notable of which is, of course, the flight song. This performance is so well known that no description is needed. Song phrases uttered on the ground seem to have exactly the same number of syllables and the same rhythm as those given in the air. But the flight song is more ecstatic in its feeling because of the increased enthusiasm of the singer and the rapid repetition of the phrases, which transforms the whole performance into an almost continuous outburst of melody. Occasionally this same continuous song is delivered from the ground, or from a fence post. During winter it is unusual for a lark to use a perch higher than a mound of snow or a mere pebble; but during the courting and nesting season, a fence post, rail, or even a telegraph pole may be used. I have never seen one alight on any leafy bough, bush, or wire. Among more than four hundred mated pairs which I have observed, there was but one in which the male did not deliver a flight song. This bird was apparently satisfied with a short warble from a clod or stone, and though he was observed for an entire season, he was never seen singing in the air: possibly he was a cripple.

There seems to be a relation of the wing beats to the opening and closing of the song phrases. To the observer it is evident that the flight of the bird above him is not direct, but deeply undulating, and also that the wing beats are not regular. Apparently there is a rhythmic falling of the body which is retarded by two or three wing beats, and then a climbing up again with a series of rapid beats or flutterings, the whole process being repeated with each phrase of the song. Sometimes these flights are made in wide circles which cross and recross many times; sometimes they are made slowly in one direction for the length of the field and back again; and then again, in windy weather, the bird may remain in the same position above the field although he is ever flying forward. Closely as I have watched and listened to these songs I am not certain that the rapid, ascending close of the song-phrase occurs simultaneously with the fluttering, climbing movement of the flight, since I have always believed that the sound reached my ears more slowly than the impression of the bird's movements reached my eyes. Certainly, however, the impression is given that the wing beats correspond to the *tempo* of the music. The song-stanza has two or

three distinct parts, the first two being repetitions of a double note often given on the ground, and the last being the ascending warble referred to above. The song may be described as *tinkling*: and although it is sweet and delicate, it can hardly be called glorious. The flight song, however, possesses an undeniable sublimity as the bird swings back and forth in wide circles, so far above the listener that it is sometimes almost out of view!



Photograph by the Author.

Figure 1. Prairie Horned Lark's Nest at Schenley Park, Pittsburgh.

Note the scant lining of grass.

The part which the female plays in the courtship is slight, although occasionally I have heard her answer the male's full song with a bright snatch of her own. She never, so far as I have observed, mounts a stone or clod to sing, and the notes she gives are short and weak. While the birds are on the ground near each other their attitude is usually that of devotion and if there is any sparring it is short-lived. The male seems to follow the female wherever she goes; but their regard is mutual. A male in the Schenley Park race-oval at

Pittsburgh followed the female for two hours while they were feeding. When we approached the male too closely he flew to another part of the field and the female followed him arbitrarily, for we were not near enough to disturb her.

Mating takes place in early or mid-March, according to the advancement of the season. During an early warm spell the female may decide to build a nest, heedless of the effect of subsequent snow or storm. Some observers have averred that the first nest is often more warmly lined than the second. Although the coldness of the season may determine this feature somewhat, I believe that more care is taken with the first nest and that it may therefore be more warmly lined, simply because more painstaking work is done before the onerous duties of brood-rearing have been assumed. Thus, second nests of Crows and Blue-Gray Gnatcatchers which I have examined were neither so carefully built nor so well lined as those built first. Furthermore, the availability of material certainly often determines the character of the lining of the first nest. Thus a first nest found not far from Bethany, West Virginia, in 1915, was beautifully lined with thistle-down, some feathers and a little moss, held in place by grasses, whereas a first nest found in Schenley Park race-oval, Pittsburgh, in 1922, was rudely lined with coarse grasses, without a hint of any warm, soft material. (See Figure 1). These two nests were built during the third week in March, and the seasons for the most part were similar, that at Pittsburgh being somewhat less windy and more rainy. However, nests of the Labrador form, *Otocoris alpestris alpestris*, are obviously lined for warmth, since soft material used in the lining of several nests found at Battle Harbor and Indian Harbor, Labrador, during the summer of 1920, was gathered at a great distance from the nest.

The female decides upon the nest-site apparently without aid of the male. A natural cavity in the ground is sought, yet admirably situated depressions are often passed by for some bald spot which better suits the inclination of the bird. (See Figure 2). The female pecks, scratches, and kicks out the dirt rapidly and determinedly. She usually finds nesting material very near at hand. She rarely flies but prefers to run about as she selects grasses and weed fibres. The lining of the nest, in the present region at least, depends almost entirely on material which is most easily available. The female does the nest building unaided by the male, although he is usually near.



Photograph by William P. Chandler, Duquesne, Pa.

Figure 2. Prairie Horned Lark Nestlings.
Note the baldness of the nest-site.



Photograph by William P. Chandler, Duquesne, Pa.

Figure 4. Male Prairie Horned Lark Feeding Young.

Mr. William Chandler of Duquesne, Allegheny County Pennsylvania, located a female bird building her nest on March 18, 1923, not far from Duquesne. When first observed, she was pulling up and shredding weed stalks which were to be used in the lining. About the nest was a rim of loose earth which had been pecked and kicked out by the female bird. This nest held a full set of three eggs on March 24. (See Figure 3).

On March 25, 1923, I discovered the nest of another pair, only partly built, not far from the one referred to in the preceding paragraph, in the very center of a baseball diamond. Here the female was working busily while the male walked about unconcernedly. The bird dug at the earth with her bill, and kicked the loose material out with her feet. The constant annoyance of boys caused these birds to desert.

The pair I watched most constantly had a nest within the race-track at Schenley Park, Pittsburgh. This pair lived together the year round, for they were found in November, January, February and March, ever together, and never with another individual near. From them I have learned how cleverly birds may act, as a result of reason or instinct, in keeping their nest-site a secret. Most remarkable was the manner in which both birds feigned unconcern. When I was within a few feet of the nest in 1922, neither bird paid attention to me, save, perhaps, in seeming to hunt food a little more assiduously. During previous seasons I had wondered why they never made outcry over me, as birds generally do; but it seems not to be Horned Lark nature to do so. During the spring of 1922 the female so rapidly built her nest, and so cleverly feigned disinterest after walking from the nest, while I was yet afar off just entering the field, that I was certain she had not yet built at all! Perhaps the birds realize that human beings are acquainted with the crippled wing ruse of such species as the Killdeer and accordingly have decided to use other tactics.

During several visits in March, 1920, when I entered the field, the male bird always met me. He did not fly to meet me, else I should have searched the ground whence he came; he was simply there. Usually no female was in sight. Then, after observing him for some minutes I would hear a soft twitter, and looking about would see the female calmly searching for food not very far from either me or the male. I finally decided that when I first entered the field the female was on the nest; accordingly when the male met me I purposely did not watch him but walked rapidly over the field hoping that I might flush the female: but invariably when I returned to the male the fe-



Photograph by William P. Chandler, Duquesne, Pa.

Figure 3. Nest and Eggs of the Prairie Horned Lark.
Note the warm lining of plant down.

male had joined him. The male was the tamer of the pair. Occasionally I was within ten or twelve feet of him and could observe his slightest movement. I fully believe that though he went through all the motions of eating, he never swallowed anything while he was being watched near the nest. And the female, though at a greater distance from me obviously merely looked here and there while walking through the grass, scarcely even pecking as she went along.

Sometimes the pair, without warning, would suddenly leap into the air and bound out of sight into the sky, always toward the east. At such times I was so disheartened that I often gave up search after I had vainly waited for their return. Upon one occasion, however, keeping the general direction of their departure in mind, I moved to another section of the park, and was surprised to find them quietly searching the ground on the golf links. They seemed in no hurry to leave, and I decided that either they had no nest, or that it was at the links instead of on the oval. Consequently I gave up observing them for a while, and descended the hill. In less than five minutes I heard a familiar note above me and, looking up, saw the larks flying slowly back to the oval. I hurried over the intervening hills to be greeted by the male sedately sitting bolt upright on a little tuft of grass, with horns erect. He chirped loudly and indulged in a song or two; no mate was to be seen. I saw that he was determined to remain stationary until I approached, so I went up to him slowly. At last he flew off and having alighted sang two or three quickly repeated stanzas of his song. Behind me sounded an answer from the female. Upon looking about I saw her not fifteen feet from me, searching for food in the grass! I have learned that much of this is clever ruse, and so successful is it in keeping the location of the nest a mystery that one is forced to wonder at such sophistication.

On March 31, 1922, after enlisting the aid of my friend, Mr. Rudyerd Boulton, I again took up the matter of finding the cherished nest at the oval. After coming to the race track, we took a position near each bird and watched closely. They did not stay especially close to each other, and were more nervous than usual. Finally the male flew off and was joined by the female, who followed the opposite side of the race-track in reaching him. The male sang briefly. In the dusk we lost sight of the female as she glided between the grass. Close observation failed to reveal her, so I suggested that my companion try to flush her from where he had last seen her. On my knees I watched the sky-line. While my friend was scanning the ground at his feet carefully, I saw a bird fly from the grass some distance to his

left. It was the female. She continued running in the same direction she had taken in flight, and disappeared behind a rise of ground. I thought she had left her nest, so ran quickly to the spot whence she had risen. Prolonged search was fruitless. Suddenly it dawned on me that the bird flushed by Mr. Boulton had probably been waiting for a chance to return unobserved to her nest. Consequently we decided to tramp around in wide circles in an attempt to flush her again. Then, clearly through the shadows came the clear, full song of the male bird, opposite; richly and sweetly he sang, and with unusual vigor for a bird stationed on the ground. It occurred to me immediately that this was evidence of unusual interest upon the part of the male. Suddenly there was an explosive flutter of wings ahead of me, and I knew the female had flushed. I walked directly to the nest; there were three eggs.* The cup was deep, and narrow at the top, and the edge firmly rimmed with short grasses and dandelion plants not yet with buds. The female, after alighting about twenty feet away, joined her mate in a far corner of the field, and did not return during our short sojourn.

The flushing of the female bird from the nest was unmistakable, the sound of the wings being totally different from that produced in starting normal flight. The male's song ceased immediately, and we flushed him from the grass as we left the field. On the following day the nest was deserted. A heavy rain filled the cup with water, which would not drain off due to the non-porosity of the clay.

All these tactics were repeated, for the most part, by birds in a large open field near Hartstown, Crawford County, in the case of a second nest for the season found in the third week in May, so I am inclined to regard them as typical.

STATE BOARD OF GAME COMMISSIONERS,
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*See *Cardinal*, No. 8, July, 1926, p. 18.